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NARDA EMF MONITORS

AMB-8059

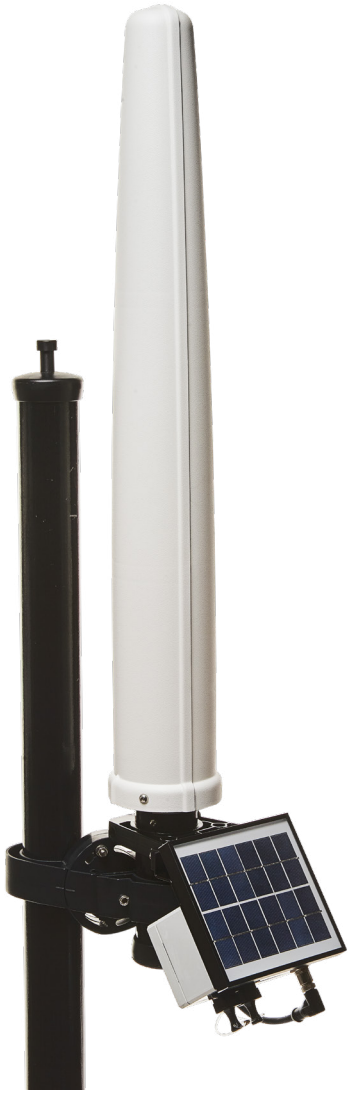
narda Safety Test Solutions

Telemeter Electronic

Continuous, remote monitoring and logging of electromagnetic fields

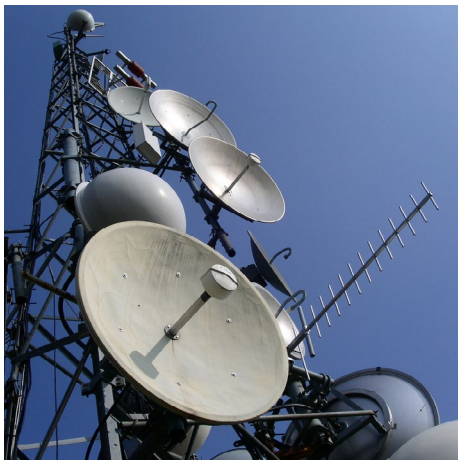
ITU-T K.83 compliant

- **Interchangeable probes from 10 Hz to 40 GHz for low frequency & high frequency applications**
- **Multi-band probes for telecommunications monitoring**
- **Simultaneous monitoring of electric and magnetic fields**
- **Fully autonomous operation:**
  - Solar panel power supply
  - Built-in 4G modem NEW
  - Built-in Wi-Fi
  - Automatic data transfer
  - Daily reports, warnings & alarm messages via SMS
  - On-board GPS
- **Easy integration into test environments and Web Based Applications**
- **Low weight, robust design, compact size for indoor and outdoor operations**
- **Drive test capability of AMB-8059/00 model according to ITU-K.113**



Area Monitor AMB-8059/03 with Solar Panel

Minimum outlay, maximum result



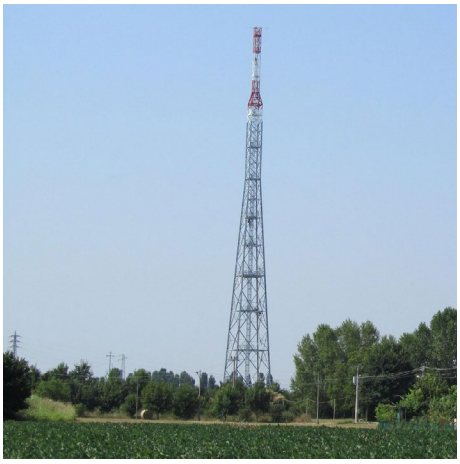
An EMF monitoring system is made up from a series of EMF monitors installed wherever the EMF presence needs to be assessed continuously or by long term observation. The EMF monitors store the data and report them using conventional mobile data communication at set time intervals to a central unit, e.g. PC or data server. The system size can range from a single location up to countrywide coverage. Narda EMF monitors combine all the features that are essential for this purpose: autonomy, outdoor usability, mobility, robustness, and low operating costs.
You can be certain to find the ideal solution for every area of application with Narda. And you can depend on its reliability, thanks to our decades of experience coupled with cutting edge technology, backed up by our own certified calibration laboratory.

The AMB Series

Its broadband application is the optimum solution for technical superiority from a tight budget.
Four models are available:

Unit designation	AMB-8059/03	AMB-8059/02	AMB-8059/01	AMB-8059/00
Solar panel (24/7) & back-up battery	✓		✓	
Internal 4G modem	✓	✓		
Wi-Fi	✓	✓	✓	✓
Ethernet port	✓		✓	
USB	✓	✓	✓	
RS232	✓		✓	
Micro SD card	✓	✓	✓	✓
Optical link	✓		✓	✓
GPS sensor	✓	✓	✓	✓
Battery life 6 – 12 months (Li-Ion)		✓		✓
Remote capabilities	✓	✓	✓	✓
Long-term measurement	○	●	○	●
Short-term measurement	○	○	○	○
Drive test measurement				○ (1)

(1) Car mounting kit required, see optional accessories



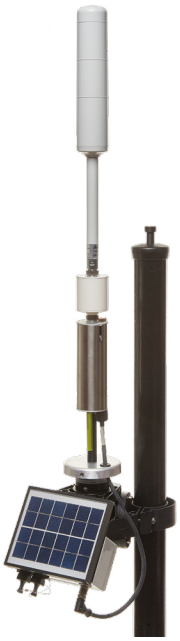
○ particularly suitable ● suitable

Complete program for all requirements

Narda offers a wide range of different isotropic probes. These include quad-band probes for separating mobile telephone services as well as wideband measurement from 0.1 MHz to 40 GHz. Special probes are available for low frequency magnetic or electric fields from 10 Hz to 5 kHz. This means that emissions from high-voltage cables and transformer stations can be recorded. Further, it is possible to combine up to two probes, e.g. an electric and a magnetic field probe in the so-called “dual probe configuration”.

Electric field probe

Magnetic field probe



Dual probe configuration (without radome)

The Applications - Narda Area Monitor Probes

Frequency range	0.1 MHz to 3 GHz	0.1 MHz to 7 GHz	10 Hz to 5 kHz	0.3 MHz to 18 GHz	0.3 MHz to 40 GHz	0.1 MHz to 8 GHz	0.1 MHz to 3GHz 0.1 to 862 MHz 933 MHz to 3 GHz	0.1 MHz to 3 GHz GSM, UMTS	0.1 MHz to 7 GHz GSM, UMTS	10 Hz to 5 kHz
Field type (isotropic sensors)	E	E	E	E	E	E	E	E	E	H
Band type	Single	Single	Single	Single	Single	Single	Tri	Quad	Quad	Single
Probe designation	EP-1B-01	EP-1B-03	EP-1B-04	EP-1B-05	EP-1B-06	EP-1B-08	EP-3B-01	EP-4B-01	EP-4B-02	HP-1B-01
Mobile communi-cations	●	●		●	●	●	●	●	●	
Radio / TV broad-casting	●	●		●	●	●	●	●	●	
Directional radio		○		●	●	○	○	○	○	
Satellite communications				●	●					
Radar				●	●					
Industry	●	●	●			●	●	●	●	●
Railroads			●							●
Power lines			●							●
Transformers			●							●

● more important ○ variable importance

Simultaneous monitoring of electric and magnetic fields

Possible dual probe configuration:

Probe combination		HP-1B-01 + EP-1B-01	HP-1B-01 + EP-1B-03	HP-1B-01 + EP-1B-04	HP-1B-01 + EP-1B-05	HP-1B-01 + EP-1B-06	HP-1B-01 + EP-1B-08
Frequency range Field type	H	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz
	E	0.1 MHz to 3 GHz	0.1 MHz to 7 GHz	10 Hz to 5 kHz	0.3 MHz to 18 GHz	0.3 MHz to 40 GHz	0.1 MHz to 8 GHz

SPECIFICATIONS

EP-1B-01 Electric Field Probe*	
Field Probe* Frequency range	**0.1 MHz to 3 GHz**
Measurement range	0.2 to 200 V/m (dynamic range > 60 dB)
Measurement resolution	0.01 V/m
Overload	600 V/m
Flatness @ 20 V/m	1 to 200 MHz ± 0.8 dB 0.15 MHz to 3 GHz ± 1.5 dB
Linearity	± 0.5 dB (0.5 to 100 V/m)
Anisotropy @ 6 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)
H-Field rejection	> 20 dB
Size and weight	450 mm length, 55 mm Ø, 180 g

EP-1B-03 Electric Field Probe*	
Field Probe* Frequency range	**0.1 MHz to 7 GHz**
Measurement range	0.2 V/m to 200 V/m (dynamic range > 60 dB)
Measurement resolution	0.01 V/m
Overload	600 V/m
Flatness @ 20 V/m	3 MHz to 200 MHz: ±0.8 dB 0.15 MHz to 3 GHz: ±1.5 dB 0.1 MHz to 6 GHz: ±2 dB
Linearity	± 0.5 dB (0.5 to 100 V/m)
Anisotropy @ 6 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)
H-Field rejection	> 20 dB
Size and weight	450 mm x 55 mm Ø, 180 g

EP-1B-04 Electric Field Probe*	
Frequency range	**10 Hz to 5 kHz**
Measurement range	5 V/m to 20 kV/m (dynamic range > 72 dB)
Measurement resolution	0.1 V/m
Overload	> 30 kV/m
Flatness @ 100 V/m (40 Hz – 1 kHz)	1 dB (typical 0.5 dB)
Anisotropy @ 100 V/m	0.5 dB @ 50 Hz
H-Field rejection	> 20 dB
Size and weight	77 mm x 53 mm Ø, 110 g

EP-1B-05 Electric Field Probe*	
Frequency range	**0.3 MHz to 18 GHz**
Measurement range	0.5 V/m to 800 V/m (dynamic range > 64 dB)
Measurement resolution	0.01 V/m
Overload	1200 V/m
Flatness @ 6 V/m	1 MHz to 1 GHz ± 1.5 dB 1 GHz to 12 GHz ± 3.0 dB 12 GHz to 18 GHz ± 4.0 dB
Linearity	± 0.5 dB (± 0.3 typical) (1.2 V/m to 200 V/m) @ 200 MHz
Anisotropy @ 200 MHz	±0.8 dB (typical 0.5 dB @ 930 and 1800 MHz)
H field rejection	> 20 dB
Size and weight	450 mm x 55 mm Ø, 180 g

EP-1B-06 Electric Field Probe*	
Frequency range	**0.3 MHz to 40 GHz**
Measurement range	0.5 V/m to 800 V/m (dynamic range > 64 dB)
Measurement resolution	0.01 V/m
Overload	1200 V/m
Flatness @ 6 V/m	1 MHz to 1 GHz ±1.5 dB 1 GHz to 12 GHz ±3.0 dB 12 GHz to 23 GHz ±4.0 dB 23 GHz to 40 GHz ±5.0 dB
Linearity	± 0.5 dB (± 0.3 typical) (1.2 V/m to 200 V/m) @ 200 MHz
Anisotropy @ 200 MHz	± 0.8 dB (typical 0.5 dB @ 930 and 1800 MHz)
H field rejection	> 20 dB
Size and weight	450 mm x 55 mm Ø, 180 g

EP-1B-08 Electric Field Probe*	
Field Probe* Frequency range	**0.1 MHz to 8 GHz**
Measurement range	0.2 V/m to 200 V/m (dynamic range > 60 dB)
Measurement resolution	0.01 V/m
Overload	600 V/m
Flatness @ 20 V/m	3 MHz to 200 MHz: ±0.8 dB 0.15 MHz to 6 GHz: ±2 dB 0.1 MHz to 8 GHz: ±3 dB
Linearity	± 0.5 dB (0.5 to 100 V/m) @ 50 MHz
Anisotropy @ 6 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)
H-Field rejection	> 20 dB
Size and weight	450 mm x 55 mm Ø, 180 g

EP-3B-01 Tri-Band Electric Field Probe*			
Frequency range	**Wideband: 0.1 MHz to 3 GHz**	**Low pass: 0.1 to 862 MHz**	**High pass: 933 MHz to 3 GHz**
Measurement resolution	0.01 V/m		
Measurement range	0.2 to 200 V/m (dynamic range > 60 dB)		
Overload	600 V/m		
Flatness @ 20 V/m	1 to 200 MHz ± 0.8 dB 0.15 MHz to 3 GHz ±1.5 dB	1 to 200 MHz ± 0.8 dB 0.15 MHz to 862 MHz ± 1.5 dB	933 to 3 GHz ± 1.5dB
Linearity	± 0.5 dB (0.5 to 100 V/m)		
Anisotropy @ 6 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)		± 0.8dB @1 GHz(typical 0.6 dB)
Out of band attenuation	Not applicable	933 MHz to 3 GHz > 23 dB (ref. to 50 MHz)	0,1 to 862 MHz > 23 dB (ref. to 1 GHz)
H field rejection	> 20 dB		
Size and weight	450 mm x 55 mm Ø, 180 g		

(*) All probes include on board A/D conversion, calibration factors on E^2PROM, and temperature sensor

EP-4B-01 Quad-Band Electric Field Probe*				
Frequency range	**Wideband 0.1MHz to 3 GHz**	**EGSM 900 925 to 960 MHz**	**EGSM 1800 1805 to 1880 MHz**	**UMTS 2110 to 2170 MHz**
Meas. range	0.2 to 200 V/m	0.03 to 30 V/m	0.03 to 30 V/m	0.03 to 30 V/m
Meas. resolution	0.01 V/m			
CW damage level	300 V/m			
Flatness @ 6 V/m	1 to 200 MHz ± 0.8 dB 0.15 MHz to 3 GHz ± 1.5 dB	925 to 960 MHz +0.5/-2.5 dB	1805 to 1880 MHz +0.5/-2.5 dB	2110 to 2170 MHz +0.5/-2.5 dB
Linearity	± 0.5 dB (0.5 to 100 V/m)	± 0.5 dB (0.06 to 20 V/m)	± 0.5 dB (0.06 to 20 V/m)	± 0.5 dB (0.06 to 20 V/m)
Anisotropy	± 0.8 dB @ 50 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 942.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 1842.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 2140 MHz, 3 V/m (typical 0.6 dB)
Out of band attenuation	Not applicable	Rejection to 1842 MHz(GSM): 25 dB to 2140 MHz(UMTS): 25 dB	Rejection to 942 MHz(GSM): 15 dB to 2140 MHz(UMTS): 13 dB	Rejection to 942 MHz(GSM): 17dB to 1842 MHz(GSM): 10 dB
Centre frequency drift	Not applicable	40 °C – 50 °C = ± 100kHz -20 °C – 40 °C = ± 100 kHz/°C		
H field rejection	> 20 dB			
Size and weight	450 mm x 55 mm Ø, 210 g			

EP-4B-02 Quad-Band Electric Field Probe*				
Frequency range	**Wideband 0.1 MHz to 7 GHz**	**EGSM 900 925 to 960 MHz**	**EGSM 1800 1805 to 1880 MHz**	**UMTS 2110 to 2170 MHz**
Meas. range	0.2 to 200 V/m	0.03 to 30 V/m	0.03 to 30 V/m	0.03 to 30 V/m
Meas. resolution	0.01 V/m			
Dynamic range	>60 dB			
Flatness @ 6 V/m	3 to 200 MHz ± 1.5 dB 0.15 MHz to 3 GHz ± 2 dB 0.1 MHz to 7 GHz ± 3 dB	925 to 960 MHz +0.5 / -2.5 dB	1805 to 1880 MHz +0.5 / -2.5 dB	2110 to 2170 MHz +0.5 / -2.5 dB
Linearity	± 0.5 dB (0.5 to 100 V/m)	± 0.5 dB (0.1 to 20 V/m)	± 0.5 dB (0.1 to 20 V/m)	± 0.5 dB (0.1 to 20 V/m)
Anisotropy	± 0.8 dB@ 50 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 942.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 1842.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB@ 2140 MHz, 3 V/m (typical 0.6 dB)
Out of band attenuation	Not applicable	Rejection to 1842 MHz(GSM): 25 dB to 2140 MHz(UMTS): 25 dB	Rejection to 942 MHz(GSM): 15 dB to 2140 MHz(UMTS): 13 dB	Rejection to 942 MHz(GSM): 17dB to 1842 MHz(GSM): 10 dB
Centre frequency drift	Not applicable	40 °C – 60 °C = ± 100 kHz -20 °C – 40 °C = - 100 kHz / °C		
H field rejection	> 20 dB			
Size and weight	450 mm x 55 mm Ø, 210 g			

(*) All probes include on board A/D conversion, calibration factors on E^2PROM, and temperature sensor

HP-1B-01 Magnetic Field Probe*	
Frequency range	**10 Hz to 5 kHz**
Measurement range and overload	50 nT to 200 µT (dynamic range >72 dB); overload: > 1 mT
Measurement resolution	1 nT
Flatness	40 Hz to 1 kHz, 1 dB (typical 0.6 dB)
Linearity	± 0.5 dB (200 nT to 100 µT)
Anisotropy	0.3 dB @ 50 Hz, 3 µT
E field rejection	> 20 dB
Size and weight	83 mm x 53 mm Ø, 110 g

AMB-8059 Multi-band EMF Area Monitor	
Technical Specifications	
Frequency range	Depending on probe (see probe specifications)
Dynamic range	Depending on probe (see probe specifications)
Resolution	Depending on probe (see probe specifications)
Sensitivity	Depending on probe (see probe specifications)
Linearity	Depending on probe (see probe specifications)
Accuracy	Depending on probe (see probe specifications)
Measurement Units	V/m, kV/m, nT, µT, mT. The unit shown depends on the probe connected
Field measured	Total field, average and Peak (MAX)
Sampling	1 measurement every 1 s

(*) All probes include on board A/D conversion, calibration factors on E^2PROM, and temperature sensor

Measurement / acquisition functions	
Memorization interval	Programmable from 30 seconds to 15 minutes
Memory	Over 128 MB
Max data storage capacity (before old data are replaced by new ones)	Over 364 days with 1 acquisition every minute
Data download	Manual Automatic managed by the unit at predefined timings (1), (3) Automatic by PC (2), (3) Automatic creation of a .TXT and .BMP file after download
Functions	AVG, RMS, maximum peak; daily report via SMS (3) Display and marking of data acquired during modem transmission (3)
Field strength alarm	Two programmable field strength thresholds (warning and alarm) with automatic notice both of exceeding the limit and returning within the limits (3)
Clock	Real time internal clock
Messages	SMS which can be sent to up to 10 mobile phones simultaneously (3)
Sensor	Display of model and calibration date
Battery management	Every record includes Battery Voltage and Charge Current value
Temperature management	Every record includes Internal Temperature value
Humidity management	Every record includes Internal Humidity value
GPS coordinates	Programmable record
General Specifications	
Modem	Worldwide LTE, UMTS/HSPA+/GSM/GPRS/EDGE coverage
SIM card type (not included)	Enabled for CSD: Circuit Switched Data service or GPRS or both data communication modes Enabled for SMS & FTP: required
Wi-Fi	Wi-Fi 802.11 b/g
Field probes	Interchangeable, several models available, single and dual probe operation
Interfaces	RS232 (9),Ethernet (9), USB (10), Micro SD Card, Wi-Fi, Optical (6), 4G modem (3)
Protection	Sensor to notify case opening
Other alarms	Protective case opening, internal overheat, internal humidity, low battery, battery overload (model AMB-8059/01 and AMB-8059/03 only), probe malfunction, field over limit.
Internal battery	AMB-8059/00 - AMB-8059/02: Non rechargeable primary battery, lithium SAFT LSH20 3.6 V,13 A/h AMB-8059/01 - AMB-8059/03: Lead, 4 V, 2.5 A/h, rechargeable
Consumption	1 mA with 4G module and Wi-Fi module off (only with RF field probes) 500 mA max when 4G module is transmitting and Wi-Fi module off (3) 120 mA max when Wi-Fi module is transmitting and 4G off (3) module 6 mA optical link data query every 1 second; Wi-Fi and 4G off module
External power	DC, 5 V, 1 A max(8)
Operating time @ 1 sec. rate	AMB-8059/02: about 8 months @ 1min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) (4), (5) AMB-8059/03: > 80 days in total darkness @ 1min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) (4), (5) For best performance install solar panels in direct sunlight.
Recharging time	24 hours with external power unit (AMB-8059/01 and AMB-8059/03 only)
Auto test	Automatic
Compliance	2014/30, 2014/35, CEI 211-6, CEI 211-7, ITU-T K.83, ITU-T K.113(7)
Ambient temperature	-20 °C / +55 °C
Dimensions	(WxDxH) 112 x 112 x 730 mm
Weight	AMB-8059/00 and AMB-8059/02: 1.2 kg (unit only); 6.5 kg (total weight including supports and base) AMB-8059/01 and AMB-8059/03: 2.4 kg (unit only); 7.7 kg (total weight including supports and base)
Environmental protection	IP55, IP66 with IP66K optional accessory (Not suitable with dual probe radome extention and Car Mount Kit option)
Country of origin	Italy

Notes:
(1): To the controller PC or to the user's FTP server depending on the preferred communication mode
(2): Directly from the station or from the user's FTP server depending on the preferred communication mode
(3): AMB-8059/02 and AMB-8059/03 only are equipped with 4G modem
(4): AMB-8059/00 and AMB-8059/01 power autonomy is longer as they are not equipped with 4G modem module
(5): Specifications depending on battery age, ambient temperature and GSM field coverage
(6): Optical link only for the model AMB-8059/03, AMB-8059/01, AMB-8059/00
(7): Only AMB-8059/00 with option car mounting kit for drive test solution
(8): AMB-8059/01 and AMB-8059/03 only; as service in maintenance or backup of solar panel in field from S/N prefix 170WY
(9): RS232 and Ethernet only for the model AMB-8059/01 and AMB-8059/03
(10): USB only for the model AMB-8059/01, AMB-8059/02 and AMB-8059/03

narda
Safety Test Solutions

ORDERING INFORMATION

AMB-8059	
Remote stations	
Area Monitor station powered by internal primary Li-Ion battery	**AMB-8059/00**
Area Monitor station powered by solar panel and back-up battery	**AMB-8059/01**
Area Monitor remote station with 4G internal modem, powered by internal primary Li-Ion battery	**AMB-8059/02**
Area Monitor remote station with 4G internal modem, powered by solar panel and back up battery	**AMB-8059/03**
Field probes	
Electric field probe 0.1 MHz to 3 GHz; 0.2 to 200 V/m	**EP-1B-01**
Electric field probe 0.1 MHz to 7 GHz; 0.2 to 200 V/m	**EP-1B-03**
Electric field probe 10 Hz to 5 kHz; 5 V/m to 20 kV/m	**EP-1B-04**
Electric field probe 0.3 MHz to 18 GHz; 0.5 V/m to 800 V/m	**EP-1B-05**
Electric field probe 0.3 MHz to 40 GHz; 0.5 V/m to 800 V/m	**EP-1B-06**
Electric field probe 0.1 MHz to 8 GHz; 0.2 to 200 V/m	**EP-1B-08**
Tri-band electric field probe 0.1 MHz to 3 GHz / 0.1 MHz to 862 MHz / 933 MHz to 3 GHz; 0.2 to 200 V/m	**EP-3B-01**
Quad-band electric field probe 0.1 to 3 GHz; 0.2 to 200 V/m / 925 to 960 MHz / 1805 to 1880 MHz / 2110 to 2170 MHz, 0.03 to 30 V/m	**EP-4B-01**
Quad-band electric field probe 0.1 MHz to 7 GHz; 0.2 to 200 V/m / 925 to 960 MHz / 1805 to 1880 MHz / 2110 to 2170 MHz, 0.03 to 30 V/m	**EP-4B-02**
Magnetic field probe 10 Hz to 5 kHz; 50 nT to 200 µT	**HP-1B-01**
Optional accessories	
8059/mast - Metallic T-shaped base and Fiberglass mast (includes kit of screws, ties and 3 ballast bags)	**650.800.085**
8059/CMK - Car Mounting Kit for drive test solution (AMB-8059/00 only)	**650.800.300**
Radome for AMB-8059 dual probe configuration	**231.800.168**
O/E optical converter USB	**650.000.176**
Cable, FO Duplex RP-02 with cable clamp, 10 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	**650.000.289**
Cable, FO Duplex RP-02 with cable clamp, 20 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	**650.000.290**
Cable, FO Duplex RP-02 with cable clamp, 40 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	**650.000.291**
Cable, FO Duplex RP-02, 10 m (only models AMB-8059/00 with optical link)	**650.000.196**
Cable, FO Duplex RP-02, 20 m (only models AMB-8059/00 with optical link)	**650.000.257**
Cable, FO Duplex RP-02, 40 m (only models AMB-8059/00 with optical link)	**650.000.275**
New IP66 Kit adapter (only models AMB-8059/01 and AMB-8059/03)	**650.000.310**
Two-wire USB cable, 1.5 m, USB(A)/USB(B), IP67 on station side (AMB-8059/01 and AMB-8059/03 only) from serial number 170WY	**210.500.046**

Included in delivery

- Primary Li-ion battery (AMB-8059/00 and AMB-8059/02 only)
- Power supply / Battery Charger (AMB-8059/01 and AMB-8059/03 only)
- Assembled Solar Unit (AMB-8059/01 and AMB-8059/03 only)
- Ethernet cable, IP67 on station side (AMB-8059/01 and AMB-8059/03 only)
- 10 m optical cable and O/E converter USB (AMB-8059/00 only)
- Four-wire USB cable, 1.8 m, USB(A)/USB(B)
- Swivel joint for installation on AMB-8059-MAST
- Operating Manual, Test & Calibration Certificates
- PC Software 8059-NSTS
- PC Software EMF GPS logger (used only by model AMB-8059/00 Car Mounting Kit option)
- PC software Area monitor Installer

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